

**IN THE CLAIMS:**

- 1 1. (ORIGINAL) An intermediate network device having a plurality of ports for sending  
2 and receiving network messages to and from one or more entities of a computer network  
3 at least some of which are segregated into a plurality of virtual local area network  
4 (VLANs) defined within the computer network, the intermediate network device com-  
5 prising:  
6 a compact-Generic Application Registration Protocol (GARP) VLAN Registra-  
7 tion Protocol (GVRP) application component associated with a selected port, the com-  
8 pact-GVRP application component having:  
9 a GARP Information Declaration (GID) component configured to main-  
10 tain VLAN registration state for the selected port in response to receiving attribute  
11 events for the VLANs;  
12 a compact-GVRP encoder/decoder unit; and  
13 a GVRP PDU message generator, wherein  
14 the compact-GVRP encoder/decoder unit is configured to compute an encoded  
15 value, in accordance with an encoding algorithm, for the attribute events associated with  
16 a given set of VLANs, and  
17 the GVRP PDU message generator loads the encoded values computed for all of  
18 the VLANs defined within the computer network within a single GVRP PDU message  
19 for transmission from the selected port.
- 1 2. (CURRENTLY AMENDED) An intermediate network device ~~node~~ as defined in  
2 claim 1 wherein the encoding algorithm is a number ~~based~~ base conversion algorithm.
- 1 3. (CURRENTLY AMENDED) An intermediate ~~node~~ network device as defined in  
2 claim 2 wherein the number ~~base~~ based conversion algorithm is  
3  $(((((E_X \times 5 + E_{X+1}) \times 5 + E_{X+2}) \times 5 + E_{X+3}) \times 5 + E_{X+4}) \times 5 + E_{X+5})$  and wherein  $E_X$  corre-

4 sponds to the attribute event for the first VLAN in the set,  $E_{X+1}$  corresponds to the attrib-  
5 ute event for the second VLAN in the set,  $E_{X+2}$  corresponds to the attribute event for the  
6 third VLAN in the set,  $E_{X+3}$  corresponds to the attribute event for the fourth VLAN in the  
7 set,  $E_{X+4}$  corresponds to the attribute event for the fifth VLAN in the set, and  $E_{X+5}$  corre-  
8 sponds to the attribute event for the sixth VLAN in the set.

1 | 4. (CURRENTLY AMENDED) An intermediate network device ~~node~~ as defined in  
2 claim 1 wherein the compact-GVRP encoder/decoder unit is configured to decode an en-  
3 coded value contained in a compact-GVRP PDU message, that was encoded using the  
4 encoding algorithm, to yield attribute event information for a set of VLANs.

1 | 5. (CURRENTLY AMENDED) An intermediate network device ~~node~~ as defined in  
2 claim 1 wherein the compact-GVRP application component is configured to generate and  
3 send a GVRP PDU message containing a just\_kidding message.

1 | 6. (CURRENTLY AMENDED) An intermediate network device ~~node~~ as defined in  
2 claim 5 further comprising:  
3 a leave timer;  
4 a just\_kidding timer; and  
5 a just\_kidding state machine,  
6 wherein upon sending the GVRP PDU message containing the just\_kidding mes-  
7 sage the just\_kidding state machine starts the leave timer and re-starts the just\_kidding  
8 timer.

1 | 7. (CURRENTLY AMENDED) An intermediate network device ~~node~~ as defined in  
2 claim 6 comprising:  
3 a leave\_all timer; and  
4 a leave\_all state machine,

5            wherein upon expiration of the leave\_all timer the leave\_all state machine enters  
6    an active state and the compact-GVRP application component generates and sends a  
7    GVRP PDU message that is configured to cause network entities that receive it to re-  
8    spond with one or more GVRP PDU messages.

1    8. (CURRENTLY AMENDED) An intermediate network device ~~node~~ as defined in  
2    claim 7 wherein the leave timer is set to a high value relative to the leave\_all timer.

1    9. (CURRENTLY AMENDED) An intermediate network device ~~node~~ as defined in  
2    claim 7 comprising:

3            a mode selection unit configured to be in one of a compatible mode, a fast com-  
4    pact mode or a slow compact mode,

5            wherein if after the compact-GVRP application component sends the GVRP PDU  
6    message containing a just\_kidding message and the mode selection unit is either in the  
7    fast compact mode or the slow compact mode and the compact-GVRP application com-  
8    ponent receives a conventional GVRP PDU message, the mode select unit enters the  
9    compatible mode.

1    10. (CURRENTLY AMENDED) An intermediate network device ~~node~~ as defined in  
2    claim 7 comprising:

3            a port partner variable configured to hold a source identifier,

4            wherein upon processing a received GVRP PDU message containing a negotia-  
5    tion message with a source identifier the compact GVRP application component places  
6    the source identifier in the port partner variable.

1    11. (CURRENTLY AMENDED) An intermediate network device ~~node~~ as defined in  
2    claim 10 wherein upon processing a received GVRP PDU message containing a negotia-

3   tion message with a source identifier that does not match the content of the port partner  
4   variable, the compact GVRP application enters the slow compact mode.

1   12. (CURRENTLY AMENDED) An intermediate network device ~~node~~ as defined in  
2   claim 10 wherein upon processing a received GVRP PDU message containing a negotia-  
3   tion message with a source identifier that matches the content of the port partner variable,  
4   the compact GVRP application enters the fast compact mode.

1   13. (CURRENTLY AMENDED) An intermediate network device ~~node~~ as defined in  
2   claim 1 wherein the compact\_GVRP application component is configured to generate a  
3   mixed format GVRP PDU message containing a conventional attribute structure and a  
4   vector message.

1   14. (PREVIOUSLY PRESENTED) In an intermediate node having a plurality of ports  
2   for sending and receiving network messages to and from one or more entities of a com-  
3   puter network at least some of which are segregated into a plurality of virtual local area  
4   network (VLANs) defined within the computer network, a method for conveying VLAN  
5   membership information comprising the steps of:

6         for a set of VLANs defined within the computer network, computing an encoded  
7         value, in accordance with an encoding algorithm, for attribute events associated with the  
8         given set of VLANs; and

9         loading encoded values for all of the VLANs defined within the computer net-  
10        work into a single GVRP PDU message for transmission at one or more ports in the plu-  
11        rality of ports.

1   15. (PREVIOUSLY PRESENTED) A method as defined in claim 14 further comprising  
2   the step of:

3           decoding an encoded value, that was encoded using the encoding algorithm and is  
4   contained in a compact-GVRP PDU message, to yield attribute event information for a  
5   set of VLANs.

1   16. (PREVIOUSLY PRESENTED) A method as defined in claim 14 further comprising  
2   the steps of:

3           generating a GVRP PDU message containing a just\_kidding message;  
4           sending the GVRP PDU message containing the just kidding message out one or  
5   more ports of the plurality of ports; and  
6           restarting a just\_kidding timer.

1   17. (PREVIOUSLY PRESENTED) A method as defined in claim 16 further comprising  
2   the step of:

3           entering a slow compact mode upon the expiration of the just\_kidding timer and  
4   the non-receipt of a conventional GVRP PDU message.

1   18. (PREVIOUSLY PRESENTED) A method as described in claim 16 further compris-  
2   ing the steps of:

3           entering one of a slow compact mode or a fast compact mode;  
4           receiving a conventional GVRP PDU message; and  
5           reverting to a compatible mode.

1   19. (PREVIOUSLY PRESENTED) A method as defined in claim 14 comprising the  
2   steps of:

3           receiving a first compact-GVRP PDU message wherein the first compact-GVRP  
4   PDU message contains a first source identifier.

1   20. (PREVIOUSLY PRESENTED) A method as defined in claim 19 comprising the  
2   steps of:

3           receiving a second compact-GVRP PDU message wherein the second compact-  
4   GVRP PDU message contains a second source identifier that does not match the first  
5   source identifier; and  
6           entering a slow compact mode.

1   21. (PREVIOUSLY PRESENTED) A method as defined in claim 19 comprising the  
2   steps of:

3           receiving a second compact-GVRP PDU message wherein the second compact-  
4   GVRP PDU message contains a second source identifier that matches the first source  
5   identifier; and  
6           entering a fast compact mode.

1   22. (PREVIOUSLY PRESENTED) An apparatus having a plurality of ports for sending  
2   and receiving network messages to and from one or more entities of a computer network  
3   at least some of which are segregated into a plurality of virtual local area network  
4   (VLANs) defined within the computer network, the apparatus comprising:

5           means for maintaining VLAN registration state for a selected port in response to  
6   receiving attribute events for the VLANs;

7           means for computing an encoded value, in accordance with an encoding algo-  
8   rithm, for attribute events associated with a given set of VLANs;

9           means for loading encoded values for all of the VLANs defined within the com-  
10   puter network into a single GVRP PDU message for transmission from a port in the plu-  
11   rality of ports.

1   23. (PREVIOUSLY PRESENTED) A computer readable medium comprising computer  
2   executable instructions for:

3           computing an encoded value, in accordance with an encoding algorithm, for at-  
4   tribute events associated with a given set of VLANs; and

5 loading encoded values for all of the VLANs defined within the computer net-  
6 work into a single GVRP PDU message for transmission from a port in the plurality of  
7 ports.